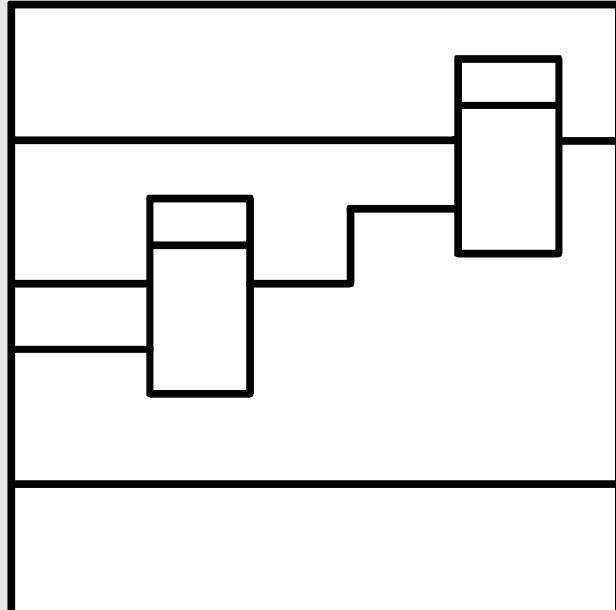


# SIMADYN D Digital Control System

User Manual

## Board MM4



## User Manual, Board MM4

Edition		Edition status
1	Board MM4	04.93
2	Board MM4	09.94
3	Board MM4	05.95

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We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

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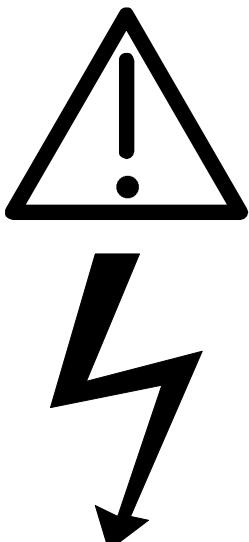
**N O T E !**

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall not become a part of or modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

**Warning information**

	<b>W A R N I N G !</b>  Electrical equipment has components which are at dangerous voltage levels. If these instructions are not strictly adhered to, severe bodily injury and material damage can result. Only appropriately qualified personnel may work on this equipment or in its vicinity. This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual. The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.
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## Definitions

### \* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

### \* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

### \* **WARNING**

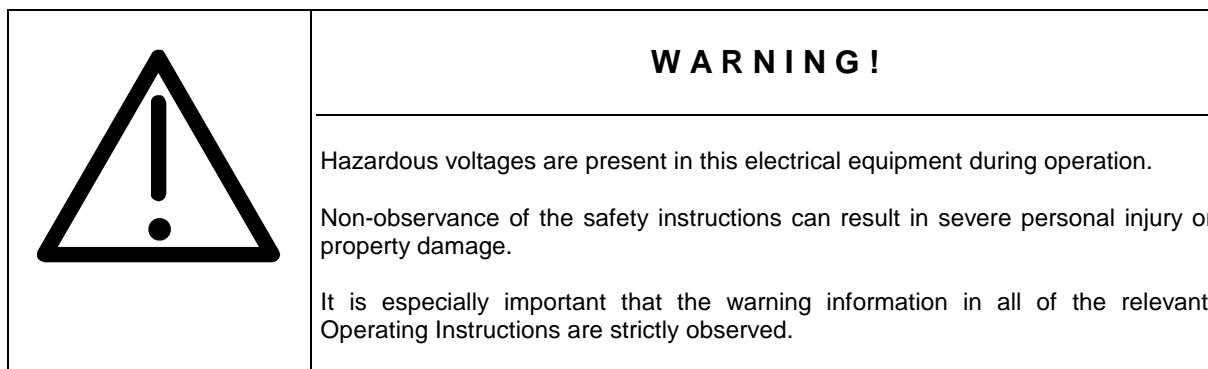
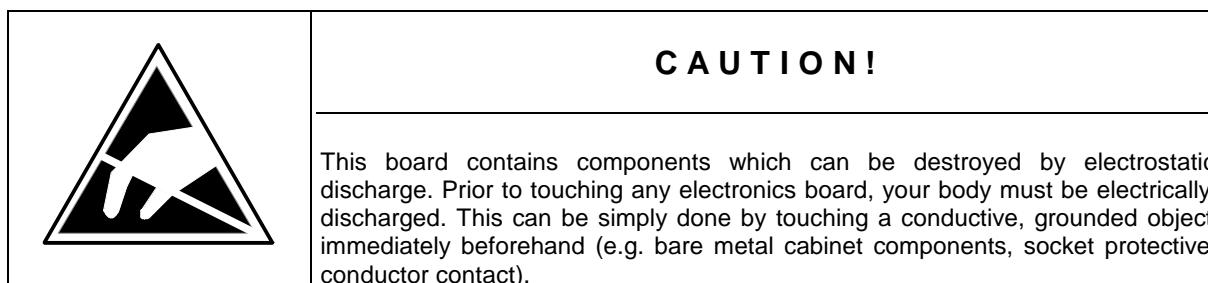
For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

### \* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

### \* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.

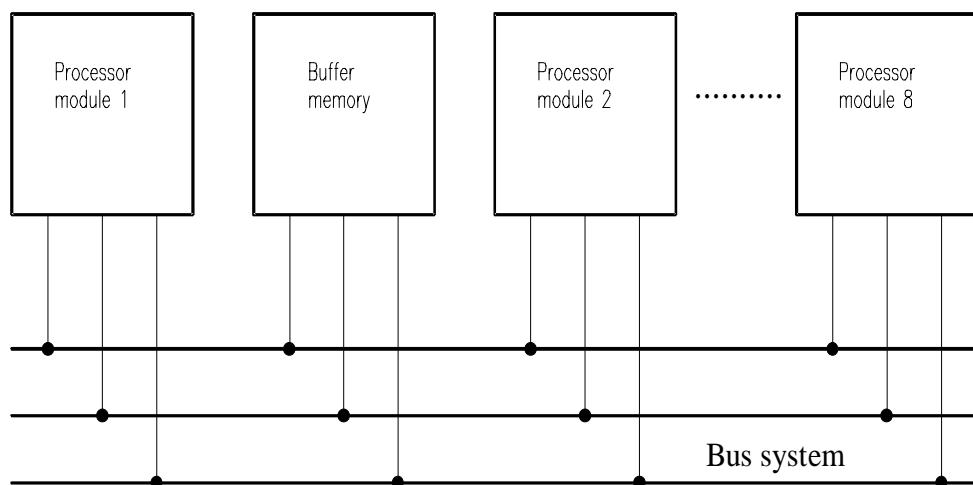


## 1. Ordering information

MM4: 6DD 1611-0AG0

## 2. Function description

Board MM4 is used in the SIMADYN D system as general RAM memory board on the local- and communications bus for 32-bit processor boards. The 32-bit processors ( PMxx, PTxx ) can communicate with one another via the MM4 board, whereby the MM4 is inserted directly to the right of the master processor.



Data transfer between the individual processor modules is realized as follows:

Each processor module addresses the bus, and after successful bus access, data is written into the buffer memory. The particular partner must then also access the bus, and retrieve the data from the buffer memory. The operating system automatically handles the buffer memory address administration. Access can either be bitwise or wordwise. 2 Mbyte is available for each bus.

A relay is located on the board, which outputs the \*RDYIN bus signal. This signal is extended to a minimum time of 150 ms (300 ms can be set). If \*RDYIN is active for longer than the minimum time, then it is output for the time for which it is effective. The relay contact drops-out under fault conditions.

## 3. Board design

- \* Connection for the local- (X2) and communications bus (X1)
- \* 2 megabyte RAM for each bus
- \* 120 ns RAM access time
- \* 8 or 16 bit data
- \* Board identification with PAD equivalent circuit
- \* Board code \* 31H"
- \* Relay contact to output the \*RDYIN signal ( X3 )

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## 4.Application information

To ensure perfect operation (also during start-up), the board must be screwed tightly into the subrack.

## 5.Techical data

INSULATION GROUP	acc. to VDE 0110 degree of pollution 2 insulating material class IIIa
AMBIENT TEMPERATURE	0 to 55 °C
STORAGE TEMPERATURE	-40 to 70 °C
HUMIDITY RATING acc. to DIN 40040	F
ALTITUDE RATING acc. to DIN 40040	S
DEGREE OF PROTECTION acc. to DIN 40050IP00	
MECHANICAL STRESSING	acc. to SN 29010 Class 12
PACKAGING SYSTEM	ES 902 C
DIMENSIONS	233.4mm*220mm
BOARD WIDTH	1 1/3 SPS = 1EB = 20.14mm
WEIGHT	approx. 500g
CURRENT DRAIN P5	
- Typical value	800mA
DATA OF THE *RDYN OUTPUT AT X3	
- Max. voltage	60V DC
- Continuous current	1A
- Max. switching current	0.5A
- Switching power	20W

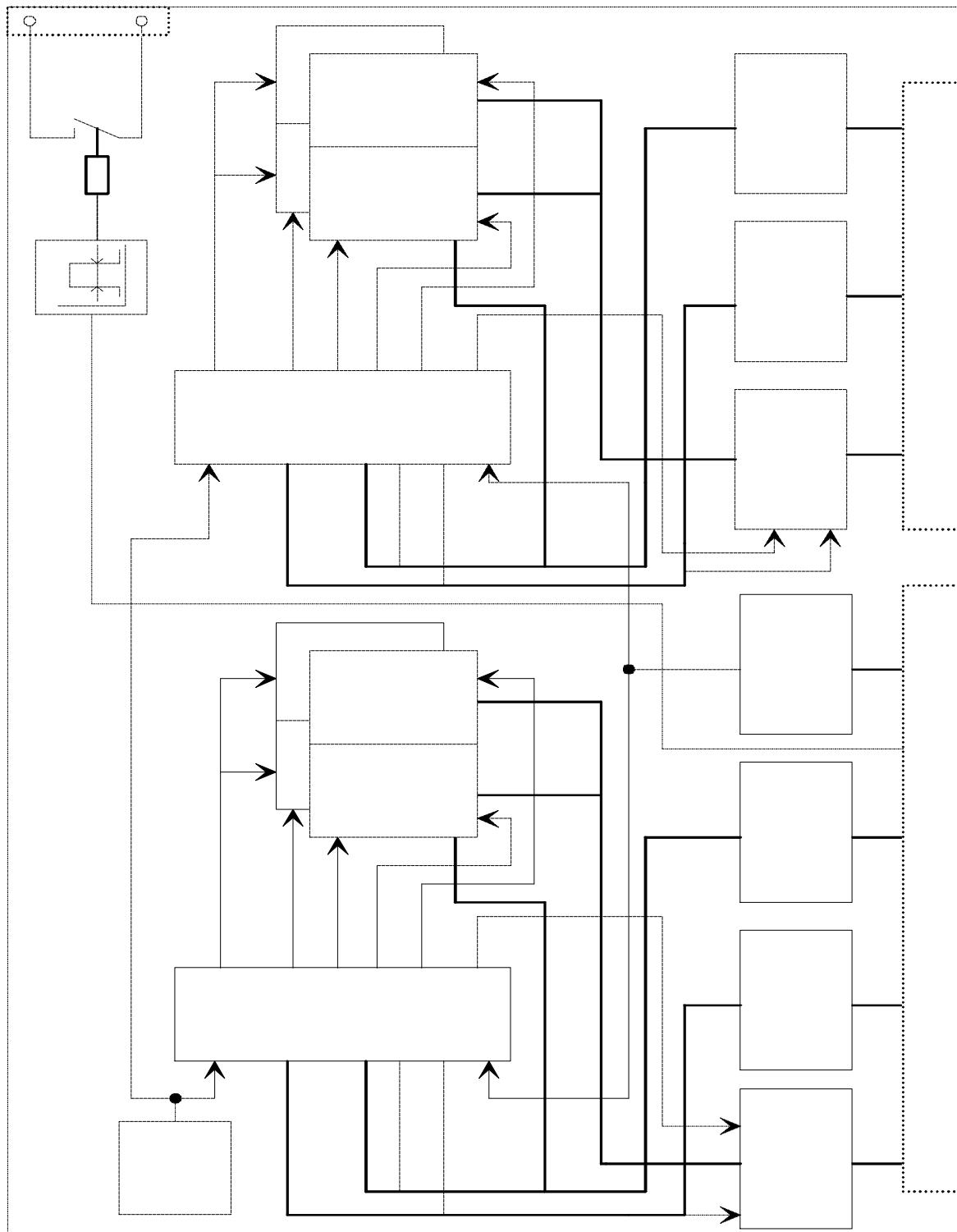
## 6.STRUC L mask in the master program

:MM4

"Buffer memory module, L+C bus, 2Mbyte"

## 7. Attachments

### 7.1. Block diagram



## **7.2. Layout diagram**

Layout diagram 3SE. 465 611.9006.00 AO

## **7.3. Dimension drawing**

Dimension drawing 2SE. 465 611.9006.00 MB

## 8. ECB instructions

Components which can be destroyed by electrostatic discharge (ECB)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronic board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact).

Boards must not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards must only be placed on conductive surfaces.

When soldering, the soldering iron tip must be grounded.

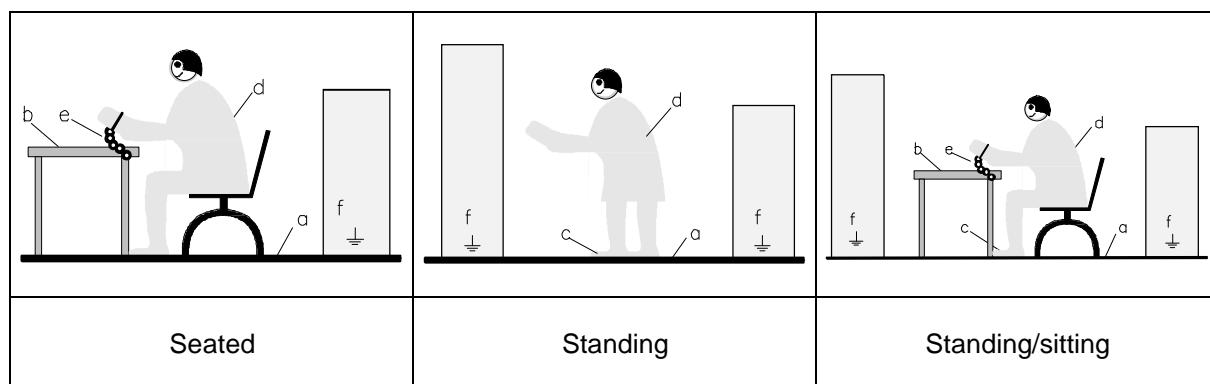
Boards and components should only be stored and transported in conductive packaging (e.g. metallized plastic boxes, metal containers).

If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

The necessary ECB protective measures are clearly shown in the following diagram.

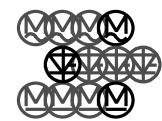
a = Conductive floor surface  
b = ECB table  
c = ECB shoes

d = ECB overall  
e = ECB chain  
f = Cubicle ground connection





Drives and Standard Products  
Motors and Drives Systems Group  
Postfach 3269, D-91050 Erlangen



System-Based  
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